THE CHEMIST

FEBRUARY 1952 VOLUME XXIX No. 2

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DR. HENRY B. HASS

Chairman, New York AIC Chapter

(See page 47)

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Award of Honorary Membership to Dr. E. H. Volwiler, F.A.I.C.
The Utilization of Scientific Personnel, Dr. Robert D. Coghill

IN THIS ISSUE

Cover Picture

Henry Bohn Hass, chairman of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, was born in Ohio in 1902. After a year at Heidelberg College at Tiffin, he entered Ohio Wesleyan and was graduated *magna cum laude* in 1921. The following summer he began graduate work in organic chemistry at Ohio State, receiving the M.A. degree in 1923, and the Ph.D. in 1925. In 1942, Ohio Wesleyan conferred on him the honorary degree of D.Sc., and in 1947, the University of Chattanooga gave him the LL.D.

Upon completion of his doctorate training in 1925, Dr. Hass was employed by the Baltimore Gas Engineering Corporation of Charleston, West Virginia, and was made director of research two months later. In 1928, he became assistant professor of chemistry at Purdue. He was promoted to associate professor in 1933, research director in 1936, and head of the Department of Chemistry in 1937. In February, 1949, Dr. Hass left Purdue to become manager of research and development for General Aniline & Film Corporation, New York, N.Y. In January of this year, he was appointed director of research for General Aniline's Central Research Laboratory at Easton, Pa.

Dr. Hass was connected with the Manhattan Project in the development of fluorocarbons from 1942 to 1946.

He is a Fellow of the Royal Society of Arts. He was elected chairman of the New York AIC Chapter in May, 1951, and his friendly, active leadership has contributed greatly to the outstanding success of its activities.

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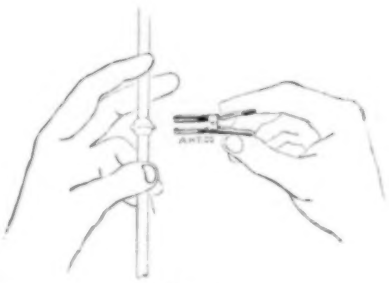

Fig. 1.
Showing appearance of Sizes 12 and 18 and methods of attaching to joints. Parts held securely by spring upon release of finger pressure.

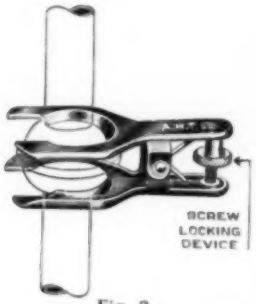

Fig. 2.
Showing appearance of Sizes 28 to 75, incl. After release of finger pressure, locking device is screwed into position.

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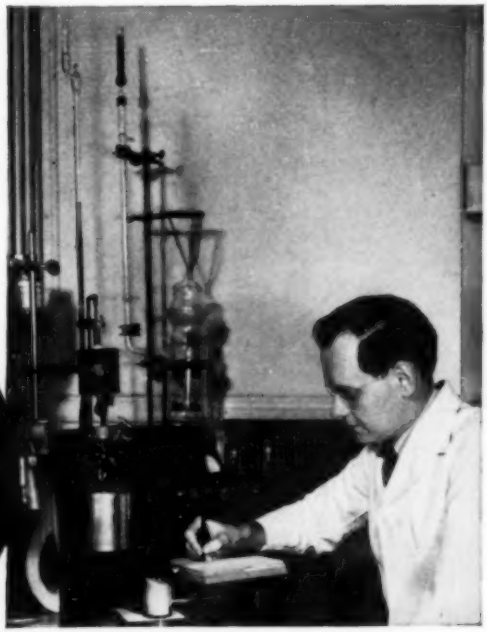

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1. *Neuss, J.D., O'Brien, M.G., and Frediani, H.A.*, Analytical Chemistry **23**, *1332 (1951)*

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EDITORIALS

On Getting Ahead

Blodgett Sage, F.A.I.C.

McLean, Virginia

THE thoughtful person inevitably is led to ponder the differences in men. Ability of high order is reasonably common in our profession, but why is it that one man attains success while another runs his uneventful course?

Knowledge is power, according to the book of maxims, but each of us knows gifted individuals teeming with knowledge, yet who have no vestige of power. Is it determination? Henry Ford, it is said, was so determined to have an eight-cylinder engine cast *enbloc* that his determination overrode each engineering failure. Is it luck, or in today's parlance, being at the right spot at the psychological time? Baron Rothschild is said always to have asked the question, "But is he lucky?" Or is it character, the priceless ingredient that J. P. Morgan always looked for?

Energy, acumen, foresight, perseverance, courage, vision, purpose, having a goal, are other traits that often have been extolled and editorialized, but Prof. Taussig summed them all up with his dictum, "no one key unlocks the door to success."

Surely, the chemist already has demonstrated that he has the qualities of perseverance, foresight, and determination, as well as an objective. How else describe those characteristics which have led him, not without sacrifice, through countless hours of training and laboratory work to his goal of being a chemist! Having come this far, must one go around with a determined glint in the eyes, carrying a book of knowledge, and wearing a rabbit's foot for luck?

All the traits of an individual have a bearing on success, but each person can place himself in a position where success will have a chance to find him.

Disregarding consideration of personal traits, two elements seem inseparable in getting ahead: The first is excellence in the job at hand; the second is in knowing people, as many as possible—knowing the right people, if you prefer it that way. One element without the other is insufficient. Of what use are ability and technical excellence if one has no place to use them? Likewise, knowing the right people gains little if ability is not present.

Too often the professional man says, "The quality of my work speaks for itself. I don't need to tell about it." In plain language, it does not work that way. If excellence advertised itself there would be no sales-

men nor advertising agencies.

Assuredly the members of THE AMERICAN INSTITUTE OF CHEMISTS are marked as having ability. The means of getting to know the right people is at hand through participation in AIC Chapter activities. Try this on for size some time soon and see what happens!

Scrap Metals in the Defense Production Program

Dr. Eduard Farber, F.A.I.C.

4530 *Brandywine Street, N. W., Washington* 16, *D.C.*

AT AN emergency conference with the business and trade press, called by the National Production Authority in the Departmental Auditorium, Washington, D. C., December 14, 1951, Charles E. Wilson, director of Defense Mobilization, and Manley Fleischmann, administrator of DPA and NPA, eloquently and disturbingly presented the urgency of this country's need for scrap metals. The supply of scrap metals is particularly critical for the next few months because of the construction program to expand steel and aluminum facilities; to increase power plants by forty per cent, and to build new chemical plants.

"The stuff is there", said Wilson, "Let us make this 'stuff' productive for our vital effort to avert war by strength. Wake up your dormant scrap and strengthen our defense!"

"We have suddenly become a have-not nation," said Fleischmann. "Iron and steel are the most dramatical, but some of the non-ferrous metals are still more important right now. There is not enough copper and aluminum even with reduced civilian production, and nickel, cobalt, columbium are just not available."

Approximately all the obvious questions were asked at the conference. Yes, automobile graveyards are still full, because a program of salvaging parts is in progress. Yes, there are tons and tons of scrap metals on beachheads and desert battlefields, but shiploads are coming in from the Far East and from all the places where the material is not too widely scattered for economic recovery. What is a fair price for scrap? That depends upon so many factors of type and transportation that a simple set of figures cannot be given. Are we going to repeat the tragically inept collection of household scrap? No, the present appeal is directed to industry, and the Department of Agriculture is organizing a separate pro-

gram for farm machinery scrap.

"The very success of our defense production program will depend upon our ability to solve the scrap problem," Mr. Fleischmann stated. And while Tom C. Campbell, editor of *Iron Age,* pointed out that speed of collection is essential, because the weather will play a great part in our ability to bring the scrap out and to its place of use, the worst snow storm of the year began to bring traffic in the Capital almost to a stand-still.

The conference closed with renewed emphasis upon the importance of scrap metals to our defense program, and an urgent plea that industry now increase its efforts to get out more scrap metals for this purpose.

AIC Gold Medal Award 1952

Dr. Fred J. Emmerich, president of Allied Chemical & Dye Corporation, New York, N.Y., has been awarded the 1952 Gold Medal of The American Institute of Chemists, for his achievements "as a business leader devoted to building chemical industry by fostering cooperation among men skilled in chemistry, engineering, and commerce."

Presentation of the medal will be made at the medal award banquet at the close of the 1952 Annual Meeting of the Institute, to be held at the Hotel Commodore, New York, N.Y., May 7th and 8th.

Dr. Emmerich was born in New York, N.Y., in 1892. He attended the New York University School of Commerce, Accounts and Finance from which he was awarded the honorary DCS degree in 1950. He was employed by Adams Express Company and the American Railway Express Company continuously from 1906 until December 1920, except for service in the Army in 1918. In 1920, he joined a subsidiary of Allied Chemical & Dye Corporation. Subsequently he became comptroller, then vice president, and in 1946, president of Allied Chemical & Dye Corporation, which has made noteworthy progress under his leadership. He is active in many associations and clubs.

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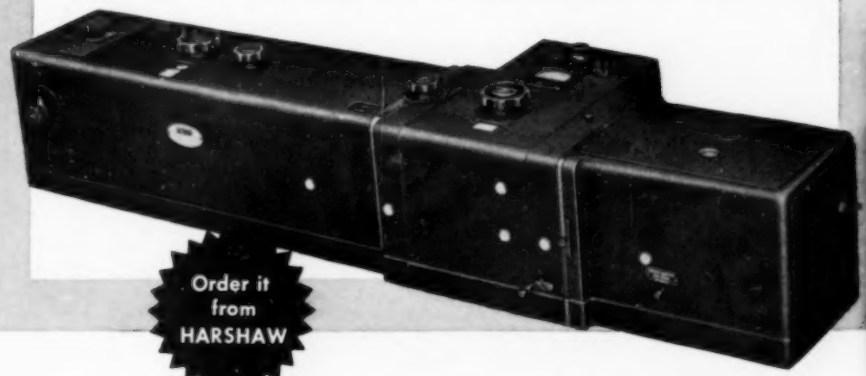

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The Model IR-2 Infrared Spectrophotometer is unsurpassed for accuracy, convenience, and overall usefulness in research investigations, analytical laboratory determinations and for the continuous automatic control of plant streams.

Many design features contribute to the convenience and speed of operation of the IR-2: Elimination of zero drift and non-linearity through the use of chopped radiation and an a-c amplifier; minimized stray energy by advanced optical design and employment of a filter-beam chopper; construction in separate compartments, making the IR-2 the most adaptable instrument available; Incorporation of a turret-stop mechanism for quick, accurate setting to predetermined wavelengths; collimation of the radiation beam so that the focus is unaffected by substituting special cells of various lengths; direct calibration of the monochromator in wavelength units to eliminate conversion charts; dual gas cells independently filled and positioned without removal from their compartment.

The Beckman Model IR-2 excels in performance: precise reproducibility of transmission measurements; high resolution of better than 3 cm-1 at 10 microns; reduction of stray light to less than 1 per cent at 14 microns and to less than 2 per cent at 15 microns; excellent reproducibility of slit and wavelength settings; constant energy output of the source; linear detecting and amplyfying system not subject to uncontrolled fluctuation in sensitivity.

The instrument's fundamental design is similar to that which has proven so successful in the well-known Beckman Model DU Quartz Spectrophotometer. The model IR-2 is constructed of separate units which are easily assembled and disassembled. A rugged, sealed monochromator mounted in a steel housing is the principal unit. To this are attached three other units in the standard instrument; the light-source compartment, the gas-cell and energy receiver compartment, and the liquid-cell compartment. Because other units such as special radiation sources or receivers, or different cells and cell compartments can be attached as desired, the instrument is readily adaptable to specialized measurements and to the changing requirements of research and plant control.

MODEL IR-2S SPECTROPHOTOMETER. Comprised of three units; the instrument assembly with sodium chloride optics, the electronic amplifier, and the power supply for use on 115-volts, 60-cycles. The instrument is assembled with monochromator and three integrally attached units: the energy receiver compartment with thermocouple, the liquid cell compartment, and the light source compartment with phototube regulator, beam chopper and auxiliary metal fixed gas cell, approx. 27-cm. Other cells listed separately. Direct reading wavelength scale 1.0 to 15.0 microns. Shipping weight 400 lbs. . . . . **$4650.00.**

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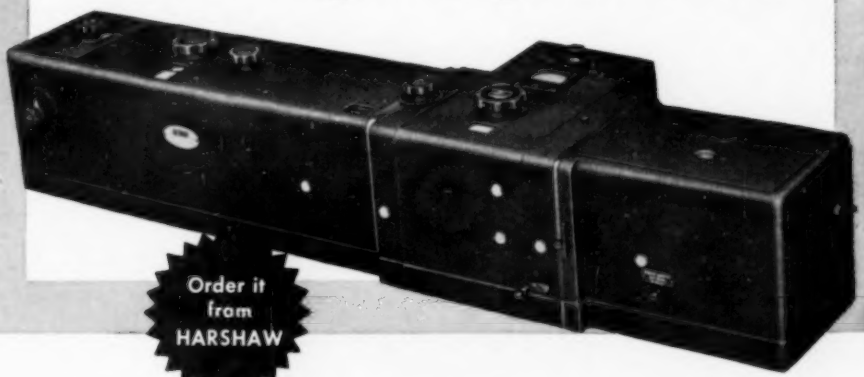

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Scene at New York AIC Chapter Dinner at which Honorary AIC Membership was presented to Dr. John E. McKeen.

Organization for Achievement

Dr. John E. McKeen, Hon. AIC

President, Chas. Pfizer & Co., Inc. Brooklyn, N.Y.

(Acceptance Address when Hon. AIC Membership was presented to him, Jan. 17, 1952.)

IN EACH of the great fields of science it is the custom to single out an individual to receive honors which symbolize that constant goal of science,—the enrichment of humanity.

As the forty-seventh recipient of the citation of honorary membership in the history of THE AMERICAN INSTITUTE OF CHEMISTS, I can tell you only a little of the individual reaction of pride and humility which I feel . . . I *must* let it suffice to say that this is an outstanding moment in my life. And in connection with it, I should like to make two observations:

First, that in the acceptance of this distinction, there is an implicit pledge, bearing on the work we have ahead of us; for, as I see it, this honor—unlike many that men confer on one another—should be earned not only by what its recipients have accomplished in the past, but continuously earned by what they strive for in the future. That is how I regard this citation; and in a humble spirit, with the resolve to try to keep myself worthy in the tasks that lie before me, I now accept it.

The second thought that comes to me is that, because of the very nature of our work, no *one* man can point to his achievement in the vast complex of chemistry, and fairly say, "I did this myself, all by myself, with no help from any of my colleagues."

No man among us, whatever his achievements, can rightfully say this, because we, like our counterparts in other walks of science, are a unified team. We in chemistry may work in locations thousands of miles apart. We may pioneer widely divergent projects. We may be engaged in fulfilling wholly unrelated needs of society, or we may be in vigorous competition with each other. Yet basically —happily—there exists among us all an inescapable interdependence. Every one of us, in every job he undertakes, must use tools that other hands have fashioned, must draw on the accumulated findings of his predecessors and his contemporaries.

The work of the chemist is pooled with the past and indentured to the future.

The recognition, therefore, that is given to any one of us in the chemical profession *is*, in reality, a testimonial to the spirit, organization and method of the whole. One of us is singled out—so we are told—because of his part as a prime mover in bringing about the "age of the antibiotics." But for the one man so designated and so honored, there are hundreds who have preceded him, and other hundreds who have worked side by side with him, who deserve a large share in that recognition.

I am aware, not only of what this antibiotic age owes to the memory of great names of the past, but also of what we owe to men and women of lesser fame,—those biologists, bacteriologists, mycologists, chemists, biochemists, chemical engineers and the uncounted, unnamed laboratory workers who plodded on through years of strain and disappointment, until this whole historic effort finally succeeded.

I can think of no better example than the exciting series of events to which my own work of these past years has been so closely linked—*the emergence of the antibiotics.*

You all know the story of the "little" accident that happened in Dr. Alexander Fleming's laboratory nearly a quarter of a century ago, which revealed to science the miraculous lytic powers of a mold in contact with pathogenic bacteria. Those who retell the tale of that discovery enjoy dwelling on the element of chance. And it was indeed by a fantastic chain of circumstances that the tiny mold floated in through Fleming's window precisely when it did and settled down precisely where it did.

But the accident ends there. It was not by chance that Fleming was working in his laboratory. It was not solely through his own decisions that he was doing so. And certainly it was no accident that Fleming had been trained as a keen and quick observer—but for which, the miracle of *Penicillium notatum* could have gone unnoticed before his very eyes. To these circumstances, other men, many others, had contributed.

Years later, Dr. Howard W. Florey and his colleagues of the Oxford research group came to America searching for a way to mass-produce penicillin so that the lives of countless soldiers might be saved. Already the wonder drug had proved its therapeutic potential. What was needed now was quantity. Among the American industrialists and government men to whom Florey appealed, the agreement to tackle that enormously difficult project was less a meeting of minds than a meeting of faiths.

What happened is well-known to you–successful development of quant-

ity production of penicillin within two years, from almost none at all to an annual rate of over seven thousand billion units, or more than enough to meet all wartime military needs.

But again it was not a matter of chance, nor yet wholly of blind faith. Again success was, in large part, the end result of one of those *chain reactions which run through the history of science from one man's mind to another.*

The miracle of mass produced penicillin was brought to pass by a group of American companies pooling their know-how in the techniques of fermentation chemistry—methods which enable the antibiotic-producing organism to do its work in tanks higher than a large room, rather than in flasks the size of milk bottles.

The development of that know-how of deep tank fermentation dates back several decades. Important techniques had been slowly perfected. We had learned how to handle micro-organisms in mass cultures, with detailed knowledge as to mechanical conditions, metabolism requirements, and their other countless necessities of life. And of greatest importance, we had developed the skilled personnel capable of discovering a micro-organism and transforming it into an instrument of massive industrial production.

Thus, with the development of these fermentation processes, we in industry were unwittingly forging a key link in a chain of events which culminated in penicillin and the dramatic saving of millions of lives. This honor is therefore shared by the entire antibiotic industry.

Now, while I am placing credit where credit properly belongs, there are three other sources of assistance to me that I cannot omit.

A share in the citation belongs to my wife. She is not a chemist. She is not engaged in industrial management. But I can assure you that if we chemists and industrialists could equal her good management, we should have no need to fear for the future of our profession or our industrial enterprises. Twenty-five years ago, in the early days of our marriage, I worked in the daytime as a chemical engineer and, at night, took advanced courses. Subsequently I became a teacher of chemistry in evening classes. I doubt if the expert counselors on home life would recommend this as the best formula for a successful marriage. Later — too many times while we American manufacturers were straining every nerve to speed the life-giving wonder drug to our soldiers—Mrs. McKeen had to accept the role of a "penicillin widow." But through it all she has been very patient with my intense preoccupation with antibiotics, and has well understood what these wonder drugs mean to the sick and

suffering. She has been a true partner for me and for science.

Another special credit I would give is to a group of teachers, members of the faculty of the St. John's Preparatory School and the Brooklyn Polytechnic Institute, who gave me my essential grounding in the study of chemistry and its related fields. I owe them gratitude for more than merely the factual knowledge one gets out of lectures and textbooks. For these were dedicated men who could impart to their students the challenge of the endless journey from the known towards the unknown.

And, finally, to this list I must add the name of the late John L. Smith, who will always be remembered in the great roster of those associated with the development and production of antibiotics. It was John Smith who stressed the ideal of close selfless cooperation among research, development and production personnel —and whose concept of the integrated scientific "team" resulted in new and significant antibiotic discoveries. His was the type of scientific leadership which gives broad vision to industry, and of which we may all be proud.

Organization for Achievement

I have mentioned the organization of modern chemistry—organization for achievement. By this I do not refer to formal structures within specific units—a college, a laboratory, or a manufacturing plant. I wish rather to use the word "organization" in a comprehensive sense—organization in terms of the informal relationships which have developed among individuals and groups.

Until relatively recent times, the chemist worked in what we speak of as an "ivory tower." So did the people engaged in most other physical sciences. Their work, their sphere of interest, as viewed from the outside, was remote from the workaday world.

Modern science—and in its very vanguard, modern chemistry — has pulled those little ivory towers out from under us. Today, the chemist's "sphere of influence" is the very earth he walks.

This has happened because, in our complex life, the interflow of knowledge is necessarily greater, immensely greater, in our lifetime than it has ever been in the past. *We live in a world where the changes that take place in a test tube today may alter the landscape for thousands of miles tomorrow; where what happens to an atom may determine the fate of armies; where a single invention may set in motion a series of human events calling for a whole new economic adjustment or a whole new body of law.*

In such a world, whether he wills it or no, *the chemist has become a collaborator in destiny.*

Long ago the profession in America became alert to a growing answerability, not only to itself, not only to its country, but to all of mankind. THE AMERICAN INSTITUTE OF CHEMISTS showed awareness of this at its inception in 1923. As members, we are obliged (I quote from the Constitution adopted at that time) "to make the profession of chemistry a powerful factor in the advancement of intellectual and material progress in the United States, to the end that this nation shall assume its rightful place as a leader among the nations of the world in scientific thought and accomplishment."

In the light of today's events, those words of almost three decades ago have a prophetic ring. But how far beyond all the expectations of that day, chemistry has gone!

When scientific discovery sets its sights on a major target, it is generally prepared, at best, for a number of failures before success is finally achieved. That much is fairly predictable. What cannot be foreseen is the possible magnitude of a victory.

Who could have foreseen that one day the antibiotics would not only save our lives, but also would help feed the millions of people of the world? We have found that antibiotics promote the growth of animals, thus opening up an entirely new frontier in agriculture!

Less than a handful of certain antibiotics—merely a few grams—added to a ton of feed is sufficient to bring poultry and hogs to the market place weeks earlier by increasing their rate of growth. The saving of time and labor and protein-rich feed is of great significance. A leading nutritionist at a mid-western state college estimates that antibiotic supplements, for hogs alone, can save two million tons of feed annually in the United States—a quantity equivalent to about 100,000 railroad boxcar loads. Thus we can produce more food, more efficiently.

But farm wonders from the chemist's laboratory do not stop. I refer to the most recent research development, which has shown that baby pigs thrive on a synthetic milk, effective because it contains the antibiotic, terramycin. The piglets can be taken from the mother within forty-eight hours and raised in wire brooders like chickens. Mortality rates from disease and crushing are greatly reduced, growth is faster, and new possibilities are opened to the geneticist who wishes to breed for larger litters. Hence we may shortly see a production revolution in the swine industry because of what happened in a chemical laboratory.

The economic importance of all these developments to American agriculture is obvious. But there is a larger significance. A survey made by the Food and Agriculture Organizations of the United Nations tells a grim story. Despite all our achieve-

ments in agriculture here at home and our efforts abroad to help farmers modernize, the per capita food supply of the world *has fallen four per cent* from the level where it stood immediately before World War II.

This means a hungry world indeed. It also means a strife-ridden world; a world living under the lengthening shadows of ideological conflict. Hence, when we consider the possible relationship of antibiotics to world food supply, we begin to get some idea of the undreamed of potential which may be in a test tube.

But the task rarely ends with the laboratory. The researcher discovers or suggests what we can do. It remains for the industrial manager, the engineer, the production technician, the market researcher, and a long list of others all the way to the sales force eventually to do it. That is the yardstick, and in chemistry we apply it to our work along three "dimensions", so to speak, three major standards:

First, *we must offer the greatest possible encouragement and stimulation to scientific discovery at all times*—encouragement commensurate with our resources and consistent with our aim of avoiding waste of priceless talents in unproductive pursuits;

Second, *we must reduce to a minimum the time lag* between an important scientific finding and the application of that finding to human betterment on a vast scale;

And third, *we must achieve maximum efficiency in quantity production of high quality products,* so that the benefits of discovery may be enjoyed in greatest possible volume at the lowest possible cost by every one.

Our chemical industry is organized for the most part, to measure up well on all three of these counts. Where it is not, it must undertake to become so; and where it is, it must strive to improve further.

In the field of primary research, we believe we have generally struck a proper balance. That is, we have tried to provide a viable framework of organization without strangling creativeness. *No time clock has ever ticked off the findings of a Fleming.*

It is in meeting the second requirement, reducing the time lag between discovery and application, that we have been weakest in the past. But here, within recent years, and under the compulsion of wartime needs, we have demonstrated what astonishing results can be obtained when we have the will to do so. Our experience with penicillin is a case in point.

To measure up to the third requirement I have mentioned, embodying quality, volume and cost, we in the chemical industry have developed an elaborate technology within the last half-century. More and more we have realized that while the area of specialization has become

narrower for the technician, the abilities of management have been broadened. The well-managed chemical concern is, in every sense, every department and in every operation, truly a team.

In varying degree, this teamwork characterizes all industry operating under the free enterprise system; but nowhere is it more essential than in chemicals. It is necessary in developing new products, in utilizing the best manufacturing methods, in ascertaining the volume to meet the demand, in guaranteeing production schedules, in quickly solving plant and sales problems—not only in all of these, but also in resolving unanticipated technological problems on which the future of an industry may depend.

The chemical industry, business-wise, is a combination of the *greatest stability and yet at the same time the greatest volatility.*

Nearly everybody needs chemicals or things made with chemicals. On the other hand, a single discovery, a new formula, a revolutionary process, can eliminate a *major industrial operation overnight.* This means that no matter how large a chemical enterprise may become, it must maintain flexibility. It must bend continually to the winds of new knowledge.

Indeed, we can expect these readjustments—more without end. *The frontiers of chemistry are limitless. Every new height we reach opens yet another horizon.*

The House That Jack Built

Dr. Sidney D. Kirkpatrick, F.A.I.C.

Editorial Director, *Chemical Engineering* and *Chemical Week*

(Presented on the occasion of the award of Hon. AIC Membership to Dr. John E. McKeen.)

THE MAN who designed this program surely displayed the wisdom of Solomon! Remember in the biblical story the two rival mothers who were quarreling for possession of a live and healthy baby boy? Here we have two rival editors quarreling for the privilege of presenting the handsome, rosy-cheeked young man whom we meet to honor. So, with the wisdom and judgment of a Solomon, someone (I suspect "Mique" Flett!) called for a sword to divide the baby boy between us. Dr. Murphy, for reasons that will be developed later, got the personal half, while I got the business — the works — which in the case of John E. McKeen means "The House of Pfizer."

What I had in mind for this occasion was a learned and scholarly comparison of the House of Pfizer

with another famous institution known as Salamon's House. The latter was first described three-hundred and twenty-five years ago by Sir Francis Bacon in a wonderful little book called "The New Atlantis." I think everyone would enjoy spending a couple of hours reading or rereading this 17th Century prophesy of a remarkable organization built on research. Published in 1627, a year after Viscount Bacon's death, the title page reads, "New Atlantis, a Worke Unfinished." Then follows this note from the Editor to the Reader:

> "This Fable my Lord devised to the end that he might exhibit therein a Modell or Description of a Colledge instituted for the Interpretating of Nature and the Producing of Great and Marveillous Works for the Benefit of Mankind."

Bacon tells of this wise old King, Salamon, who had established a great Foundation of Causes for the "Enlarging of the Bounds of Human Empire, to the effecting of all things Possible." It was a sort of Super Mellon - Battelle - Armour-Midwest-Southwest-Stanford Research Institute.

Time will not permit me even to hint at some of the ramifications of this great organization and the men who operated it for the "Benefit of Mankind." I must hasten to draw the parallel between Salamon's House and the House of Pfizer. The latter too, is old, as industries go, and has many ramifications. In its one-hundred and three years it, too, has been engaged in the "Interpreting of Nature and the Producing of Great and Marveillous Works for the Benefit of Man."

I wish it were possible to cite all of the achievements that have come from the fruitful partnership of the two young immigrants who in 1849 established manufacture in that tiny brick building at Bartlett Street and Harrison Avenue in Brooklyn. Still standing today in the shadow of the modern office buildings and the huge Brooklyn works of the Pfizer Company, this little old building has long served as a reminder of one of John McKeen's favorite quotations—"Today's highly competitive business lives constantly in the shadow of obsolescence."

But I'm going to begin my story of the great House of Pfizer in 1873 when Charles Pfizer, Sr., hired a sixteen-year-old office boy called "Jack". Twenty-seven years later when Mr. Pfizer retired and the partnership became a corporation, John Anderson became an officer and director. (I doubt if anyone ever called him "Jack" after his office boy days). He eventually became the leading figure in the company's management, and when he died in 1940 after sixty-seven years of continuous service for the Pfizer Company, he was chairman of its executive committee.

I first met John Anderson at Tariff

hearings in Washington in 1917. He took an interest and helped me in my amateurish efforts in writing the first Tariff Information Survey of the United States Tariff Commission. It dealt with the Acids of Paragraph 1 of the Tariff Act of 1913—among them Citric, Tartaric—and their imported raw materials, most of which came from France and Italy. Through Mr. Anderson's courtesy, I was later privileged to visit a number of French wineries of which I still have very pleasant memories. I saw there the processes of recovering wine lees, argols and tartrate of lime.

One of the great things Jack Anderson did for the House of Pfizer was a hire in 1906 another sixteen-year-old, a laboratory assistant also named "Jack". Continuing to work in daytime for Pfizer, young Jack Smith studied at night and somehow managed to finish his high school education. Then he went to night school at Cooper Union, and eventually got his chemical degree in 1912. He early concentrated on the scientific development of manufacturing processes, and in 1926 was general superintendent when he hired still another young fellow named "Jack"—a $40-a-week control chemist fresh out of Brooklyn Polytechnic. More about Jack McKeen later.

Now, I want to pay tribute to the man who hired him. When John L. Smith died on July 10, 1950, he was chairman of the Board of Directors, having previously served as vice-president, senior vice president, and since 1945 as president. I quote two brief statements about his great contribution to the House of Pfizer, to the chemical industry, and to the community and nation:

From the 100th anniversary volume published in 1949:

> "The tenure of service of John Smith covers a period of remarkable technological and financial growth of the company. Over the years, he surrounded himself with a highly trained hardworking staff of scientists, engineers, and other operational personnel. In the early 1920's he led his team in the development and production of citric acid by the fermentation process. The success of this work revolutionized the entire industry in the United States and abroad."

In the 1950 annual report of Charles Pfizer & Company I find this more personal tribute over the signature of his successor, John E. McKeen:

> "Beloved by all of the personnel in the organization he so capably led, honored and respected in the chemical industry, and universally looked upon as an outstanding citizen who gave unstintingly of himself to many projects of a civil and benevolent nature, Mr. Smith will always occupy a special place in the memories of those who knew him."

And so he will.

Now, let us get back to some of the other "Jacks" who are still helping to build an even bigger and better House of Pfizer. Jack McKeen got his first job in 1926 when the ink was barely dry on his Ch.E. diploma from old Polytech.

From control chemist, he went into process development to become a

department head in 1935, then assistant superintendent, and in 1942 Jack Smith gave Jack McKeen his former job as general superintendent. Three years later he was elected a vice-president, and in three more, 1948, he was elected to a newly created office of executive vice-president. On September 27, 1949, Jack McKeen became president of Pfizer at the ripe old age of forty-six. Then a year later he was also elected chairman of its Board of Directors.

Jack McKeen had a most important part in putting Pfizer into top place in the production of penicillin during the war. But he is even prouder of the team that put terramycin—which he calls the "jewel of all the antibiotics"—into successful commercial production in eight months as contrasted with fifteen years for penicillin and three years for streptomycin.

Jack McKeen, who was brought into Pfizer by Jack Smith, who in turn had been hired by Jack Anderson, is also proud to have another Jack, John L. Davenport, as his executive vice president, and still another Jack, Jack Powers, Jr., as newest vice president and director — a post held not so many years ago by his father, John J. Powers, Sr.

(Parenthetically, I understand that you do not have to be named "Jack" to get along in Pfizer, but it certainly helps. That is why I have labeled these remarks, "The House that Jack Built.")

When I mentioned this to one of my Wall Street friends, he made the crack that the House that Jack Built had also built a lot of "Jack" for a lot of lucky shareholders. He pointed out that in 1939, total sales were only $6,190,000, and net profits were a wee $867,000 equivalent to 58 cents a share on the common stock. Nine years later (in 1948) sales were up from $6,190,000 to $47,759,000 and profits hit $9,587,000. This is equivalent to $6.35 per share as compared with 58 cents but nine years before. Last year's sales and earnings have not yet been published, but based on figures for the first three quarters, I am sure that sales exceeded $100,000,000, a sixteen-fold increase since 1939. Few, if any, chemical companies have ever exceeded that record. But I know of none in the chemical game that has ever held five Jacks and played them quite so well!

John

Dr. Walter J. Murphy, Hon. AIC

Editor, Chemical & Engineering News

Industrial & Engineering Chemistry and Analytical Chemistry

(Presented on the occasion of the award of Hon. AIC Membership to Dr. John E. McKeen.)

MY GOOD friend and frequent collaborator, Dr. Sidney D. Kirkpatrick, in his highly individualized and always inimitable manner, has described most satisfactorily the scientific and professional accomplishments of one John McKeen. "The House That Jack Built" is a mighty substantial structure — not a house of cards, even though our hero qualifies as an expert at contract bridge even among professionals. Of course, there are bugs in "The House That Jack Built", but the bugs are of the type decidedly beneficial to mankind.

One is always happy to know he has had a share, even a very modest one, in the success of some truly outstanding individual. Without stretching the bonds of modesty too far, I can say that I have exerted a beneficial influence on John's career on at least four occasions.

I had already graduated from the Polytechnic Institute of Brooklyn when John matriculated. However, we used to meet rather frequently at our fraternity house and at basketball games at the Institute. In his undergraduate years, John evinced interest in a great many different games, including one that usually is described in polite circles as African dominoes. One evening, John and some of his fraternity brothers were gathered together in the attic of the fraternity house. Occasionally bits of conversation descended from the attic to the parlor floor which made one gravely suspicious that the conversation was one decidedly not devoted to the science of chemistry. Indeed, to one wholly ignorant of this ancient game of luck, or shall we say skill, some of the utterances, such as, "Come on seven, baby needs a new pair of shoes," might well arouse some doubts about the morals of the fraternity brothers.

Unfortunately for McKeen, who seemed to be the ringleader, we had in the fraternity on that particular evening, a reformed African domino player. I need not dwell here in detail on the fervor with which reformers castigate those who have yet to see the errors of their ways. Within a few minutes the most successful African domino player in the fraternity found himself in the precarious position of being charged with breaking one of the most rigid house rules and

facing possible expulsion from the Institute. Lest I appear to be exaggerating, let me say that fraternity rules then were really strict — a lot more so than they are today.

Naturally distressed at his unfortunate situation, John McKeen advised me of his predicament. It took but little persuasion on my part to convince the dastardly reformer and informer that he, too, had played African dominoes in the fraternity house on more than one occasion and, therefore, if charges were to be made, I wanted to point out that there was no statute of limitations for house rules. I was just what the doctor ordered in this crisis, for I had been a rather consistent devotee of African dominoes myself and had had reasonable success against McKeen's persecutor. The charge against John was dropped.

One Walter J. Murphy and one Gertrude B. McMahon were married on February 27, 1927. The first dinner guests of the Murphys in their very modest apartment in the Flatbush Section of Brooklyn was one John McKeen and one Noreen Conden.

To this day I am not at all certain just what impressed John the most on this particular occasion, but I recall very vividly when the ladies retired from the living room to powder their noses after dinner, John remarked that if the Murphys could make a go of matrimony, he was quite confident Noreen and he could do an equally good job. Very obviously they have. John certainly would be the first one to bestow all the credit in the world on Noreen as a full-fledged partner in his outstandingly successful career, and all of us welcome this opportunity to pay tribute and to voice our admiration not only for John but also for Noreen, his lovely wife. Her quiet yet inspiring charm, her unselfish devotion to John, her womanly qualities, and her pronounced success as a home-maker are important contributions that neither John nor we would wish to overlook on this particularly auspicious occasion.

Now I come to the third "incident". In 1944, John stated to me in a conversation, that he thought the time had arrived when Chas. Pfizer & Co. should permit members of its research and production staff to present papers at scientific and technical meetings. He said that as far as he could recall, no Pfizer man had ever presented a scientific or technical paper before a professional society. Perhaps it was presumptuous on my part, but I did call my friend of long standing, Bert Teeter, now retired, but for many years the treasurer and a very influential member of the Board of Directors of Chas. Pfizer & Co. I told Mr. Teeter I thought it would be a great morale builder for the scientific and technical staffs of Pfizer, if they were permitted to tell

something of their work before scientific audiences. I am not particularly persuasive and I suspect Bert was more than half sold on the idea long before I called him. Possibly as a result of this conversation, plus the very excellent spade work by John within his own organization, he presented an excellent paper at the St. Louis meeting of the American Institute of Chemical Engineers describing large-scale penicillin production as carried out in the Pfizer plant. Up to that time, there was practically nothing in the literature on volume production of this astoundingly new and efficient drug. The McKeen paper opened the way for many other scientists and technologists of the Pfizer organization to appear on the lecture platform. I believe sincerely that John's insistence on a break with tradition, at this particularly psychological moment, helped materially in building a morale among the professional people of Pfizer — second to no other company in this country.

And now as to number four in the list of "incidents", this one probably is quite far fetched. The day John was elected president of Pfizer, I jokingly reminded him that I was now one of his bosses; that I was the proud owner of ten shares of Pfizer. My comment was meant to be purely facetious, but I was not at all surprised when John took on a serious expression and said "Walter, I realize that I have assumed great responsibilities to you and to the other stockholders of Chas. Pfizer & Co. I realize also that I have still greater responsibilities to millions of human beings. What is done at Pfizer can exert great influences in improving the lot of the human race." Here is enlightened management — the kind of leadership in research and industry the world needs desperately.

The Human Dynamo

If there is any term that adequately describes John McKeen, then it is the expression "human dynamo"! John works hard, he plays hard, yes, and he smokes hard. There is nothing halfway in anything that John ever does. By today's standards, he would hardly qualify as a potentially outstandingly successful basketball player in collegiate circles. Size was no handicap to him playing basketball, nor has it ever proven to be a handicap to him in anything else. He simply decided that it was much quicker to run through the legs of the basketball opposition that it was to try to run around them, or to jump over them. As an engineer, John knew the shortest distance between two points is a straight line. He has been that direct during all his professional and business career.

Brooklyn "Poly" did not play in Madison Square Garden in the early '20s, and thank heaven it does not play there now. But we did play practically every member of the Ivy League, and such teams as Yale, Prince-

ton, Dartmouth, and Columbia regularly figured Brooklyn "Poly" as *the* team to beat. Between the years '24 and '26, the greatest problem of "Poly" opposition was trying to contain John McKeen. John's athletic interests included wrestling, handball, and in his St. John Prep days football.

It is always interesting to speculate on the reasons why some particular individual rises to great heights. Many personal characteristics have contributed to John's success — one is persistence. John's first job with Pfizer was one that could hardly be designated as being professional. How many young men today or yesterday would have been sufficiently persistent and humble to accept a job as a painter when there were no openings in the laboratory or in the plant befitting the professional training young McKeen had obtained at Brooklyn "Poly"?

The late John L. Smith, then president of Pfizer, in discussing McKeen during a chance visit on the Merchants Limited from New York to Boston, told me John was not too hot as a painter, but there was something about the young man that appealed to him. "In fact", said Mr. Smith, "I just did not dare to let him go, for fear he might work for one of our competitors."

Another reason for John's tremendous success is his willingness to accept any amount of responsibility without hedging and without qualifying the degree of responsibility he will assume. I have had it from several members of the executive group of Pfizer that it was this characteristic — plus sound technological knowledge and ability to lead and inspire others — which led to John's selection as the leader of the Pfizer organization to build the Kembal Bishop & Co. plant in London to manufacture citric acid using the Pfizer fermentation process.

So far, I have mentioned the qualifications of persistence, humility, willingness to assume unlimited responsibility. Sid Kirkpatrick has amply documented John's scientific and technological competence. Transcending all these highly desirable characteristics is his intensely human feeling for his friends and his friends' friends, and certainly for all those who are associated with him in the Pfizer organization.

As assistant superintendent, as superintendent, as vice president in charge of plants, and as executive vice president, John has always been readily accessible to his associates. As president, and as chairman of the Board, he remains close to every Pfizer employee. He has not placed himself in an ivory tower under an impenetrable guard of secretaries. His door is open — to everyone.

If John believes in something, his interest knows no bounds. Peter Regna recalls that the first time he met

John was in the Pfizer laboratory. McKeen was then one of the administrative men in charge of citric acid operations and Peter was one of the researchers. We all know production men as a rule do not go out of their way to say nice things to members of the research staff. But McKeen in those few minutes gave Peter considerable encouragement and faith in the future of Chas. Pfizer & Co. This was well before the day of volume production of antibiotics and when the future of Pfizer was not quite so well defined as it is today.

No one will ever know the extent and variety of John's charitable instincts. Not so long ago an insurance man told John the difficulty one of his employees was experiencing in obtaining Cortisone. John did not know the sick man and, of course, Pfizer is not a manufacturer (at least not yet) of Cortisone. Busy though he was, John took the time to arrange for an adequate supply of capsules of Cortisone at a price which represented a tremendous saving to a man he had never met. He is one of the most charitable persons I know, and his wallet is opened often to those who really are in need of assistance. I am afraid there are even instances when his Samaritan nature is imposed upon.

John's interest in the Brooklyn Dodgers is pure love and devotion. He was born in Manhattan, but moved to Brooklyn when he was one year old. When John Smith, late president of Pfizer, obtained a financial interest in the Dodgers, John had reached the utmost pinnacle of contentment. The day was either outstandingly good, or a dismal, bleak failure, depending upon whether the "Bums" won or lost.

I was at home nursing a cold last September but well enough to watch television during the special three-game series arranged to decide the National League Championship between the arch rivals, the Dodgers and the Giants. When Thompson smacked his home run in the ninth inning, Gertrude sat back in her chair and said "Poor John." She then added, "I guess we don't see a world series game this year."

I understand from his secretary that John was so elated about the prospect of Brooklyn winning the National League pennant last year, that he planned to purchase a block of World Series tickets to give to his friends. John's secretary was on the telephone during the ninth inning ready to make the purchase. As word came over the radio on what had happened to the second and final pitch of Branca, John turned to his secretary and said "Just forget it" and the receiver went back on the hook and Brooklyn went into mourning,

The Personal Tribute

John, you are a most worthy recipient of this award. There are thousands who are with you in spirit and who wish they could have been pres-

ent to see you receive this great honor. We hope and pray that God will continue to bless and guide you in the future as He has done in the past. The attributes which have made you a success are those of which you can be very proud. You have won success in the only way it is worth winning. These same attributes will continue to serve you well in the future. I am sure this honor is a forerunner of many that will be given to you in the future in grateful recognition of the services you have performed for the profession in the past and will continue to contribute in the future.

You are an outstanding example of a type of managerial leadership in this country that assures the continuance of free enterprise and the American way of life.

Hans A. Eggress, president of Continental Can Company, speaking on the topic, "The Challenge of Leadership" at a Manufacturing Chemists' Association meeting describing the responsibilities of management, said: "We must let all people know we are interested in them and in what they think and that we are indeed interested in the growth of the best in our way of living."

John, I recall the one direct quotation in the *Fortune* article on you published in January of last year. "It is wonderful to have a job where you can contribute to human welfare." This certainly epitomizes the combination of so many fine attributes that we all admire so intensely. Your inspirational contribution to the chemical profession never can be adequately acknowledged in words—such a depth of appreciation is so closely related to love that the two are almost indistinguishable. I remember my father saying that if one wished to speak of love, one should resort to the Gaelic language — that it is far more expressive than French. John — as one Irishman to another — GRADHAIMD THU. And just on the chance that you may have forgotten your Gaelic, let me say a very inadequate translation would be, We all love you!

Completed: By Dr. Henry Turkel, F.A.I.C., of Detroit, consultant to the Education and Training Division of the Surgeon Generals Office, Washington, D.C., a year's tour of instruction to the medical officers of the various Army hospitals in the United States. Lectures and demonstrations were given on the latest methods of performing bone marrow biopsies and infusions. Dr. Turkel has spent the past twenty years in perfecting instruments and methods in this field of medicine. He concluded his tour in Habana, Cuba, where he was presented with honorary membership in the Cuban Society of Public Health. He was also made a corresponding member of the Cuban Society of Biology and Tropical Medicine.

Dr. John E. McKeen accepts scroll of Honorary AIC Membership from President Flett

Presentation

President Lawrence H. Flett

The American Institute of Chemists

I WOULD like to explain briefly what the INSTITUTE is and why it awards Honorary Memberships. THE AMERICAN INSTITUTE OF CHEMISTS is concerned with the chemist and not with the science and technology, which are his tools. As such, it is concerned with character rather than knowledge and with chemical relations rather than with the relations among the chemical elements. Since the INSTITUTE is concerned with how things are done, our members may be measured by accomplishment and reputation. This organization feels that any chemist who betrays his trust hurts all of us. On the other hand, any chemist who distin-

guishes himself by progress and accomplishment helps all of us. It is a purpose of this group to recognize leadership in these things by Honorary Membership.

The INSTITUTE believes that the chemist's dealings should be characterized by truth and honesty. To that end, all members subscribe to a severe code of ethics. John McKeen subscribed to this code in 1940. That does not mean that he or other members of the INSTITUTE were pledging themselves to live differently; they believed in a high standard of ethics long before they joined the INSTITUTE. John McKeen needed no code to measure truth and right. He has lived an unselfish life where he strove from the bottom of his heart to achieve these virtues. His rare humility and refreshing modesty have endeared him to his friends and associates. These qualities have not retarded his success. On the contrary, should we not believe that they are a part of his success?

I have had the opportunity to make an unusual tour of the laboratories of Charles Pfizer & Company. I was permitted to talk with research chemists about their work, to discuss with them what they were trying to do—a flattering trust. I also had the opportunity to talk with other members of the organization—the plant man, the man in the cafeteria, the technician. The loyalty and enthusiasm of these people is a revelation of fine management. Here indeed is an "organization for achievement. Inventive genius is creative in such surroundings where it is stimulated by interest and appreciation; good management recognizes that genius can never be driven.

The head of a corporation is looked upon as the flowering top of his organization. In reality, is he not the root from which the nourishment of inspiration and enthusiasm must come? If the root is rotten, the plant soon withers and dies; but if the root is strong and true, a sturdy organization grows, and from the flowers of chemical research come the ripened fruit of industrial accomplishment.

Chemists in the pharmaceutical field hold a very special place in our profession, because they supply the means of healing misery and disease and the poverty that goes with them. Many have enjoyed relief from fevered illness by use of the wonder drugs so recently created by chemical research. Each day that these remedies are delayed, if indeed they are ever successfully produced at all, means loss of life, unendurable pain and troubled watching by the bedside. In this field of healing, Dr. McKeen has won acclaim because Charles Pfizer & Company, under his enthusiastic leadership, has succeeded in bringing the fruits of research to a needy world.

His exemplary life has brought

credit to the entire chemical profession. That is why the INSTITUTE meets to add his name to the list of Honorary Members, of which the INSTITUTE is justly proud, not because of deeds that are done, but because we recognize him as a leader who by precept and example shows all how to march boldly forward to greater success.

John E. McKeen, I am empowered by the National Council of THE AMERICAN INSTITUTE OF CHEMISTS to award you Honorary Membership. The citation on your certificate reads:

For his vigorous and unselfish efforts in the advancement of chemical manufacture as an instrument to help and heal mankind.

Invocation

Rev. James J. Pallace, S. J., F.A.I.C.

Saint Peter's College, Jersey City, N.J.

(Presented at the Award of Honorary Membership to Dr. McKeen)

OUR FATHER, look down upon and bless us gathered here this evening to honor You in honoring one of our fellow men. Bless all our efforts dedicated to the discovery of the truths You have hidden in nature. Illuminate our intellects that they may more readily perceive these truths and fortify our wills that we may always use our scientific knowledge for the welfare of our fellow men. Bless us gathered here this evening to honor one of our fellow men, outstanding as a scientist and as a man. Bless these gifts which we are about to receive from Your bounty, Amen.

International Symposium: On the Reactivity of Solids, to be held at the Chalmers University of Technology, Gothenburg, Sweden, June 9th to 13th. It is sponsored by the Royal Swedish Academy of Engineering Sciences and the Chalmers University. Request information from the Academy at Box 5073, Stockholm 5, Sweden.

Speaker Dr. Emil Ott, F.A.I.C., who will talk on "The Team Approach in Research and Development", February 27th, London, Ontario, Canada, before the London Section of the Chemical Institute of Canada. On the following day, he will give the same address before the Sarnia Section of the Chemical Institute of Canada, at Sarnia, Ontario.

Industry and Education: At the Annual Oil Progress Luncheon held in New York, N.Y. October 16th, Dr. William Jansen, superintendent of schools of the City of New York, praised the exhibits made available to schools by the Oil Industry. "Our science classes," he stated, use the display as a center around which is developed a unit of study on oil," and the exhibits are also informative to thousands of less scientific-minded students. He also praised the Oil Industry for its cooperation with trade schools in establishing courses for service station attendants, oil-burner repairmen, and installation-mechanics. "The interest of industry in education and of education in industry is not a new phase of American life . . . When one considers the fact that vocational training is not confined to vocational schools, but rather included to a considerable degree in the curricular offerings of general and academic schools, the partnership of industry and education become more impressive."

Speaker: Dr. Alexander Silverman, Hon. AIC, of the University of Pittsburgh, who delivered the opening lecture at the glass show in Columbus, Ohio, February first, under the auspices of the Beaux Arts Club.

Re-elected: C. C. Concannon, F.A.I.C., as president of the Harvard Club of Washington, D.C., for 1952.

Chemistry Creates Sinews of Peace

D. H. Killeffer, F.A.I.C.

Consultant, 168 Westchester Ave., Crestwood, Tuckahoe, N.Y.

(Here is one of the most significant articles ever written about chemical industry.)

WHAT we need is better *human* technology. We now have ready at a moment's notice all the technical parts for solving the world's pressing problems. The means to health, to plenty, to economic security are all provided by the swift advances of science working through industry. Only their broad human applications are missing. And instead of doing for ourselves and teaching others to do for themselves the best we now know how to do, we continue to send delegates to negotiate uncertain peace with delegates of other peoples that we do not trust and that do not trust us. Even at best that diplomatic approach can only deal with symptoms. It fails to come to grips with the basic facts because it takes no account of what's new in the world. It neglects the impact of the vast and revolutionizing creations of industry working with science, particularly chemistry, during the past few decades. Most important of all, it ignores the power of these new forces to destroy the causes of war at their very roots; to overcome forever and for everyone human hunger, misery, poverty and disease.

The Chemical Revolution

It is unnecessary to detail here the chemical aspects of the human revolution that our science has turned loose in the world; but we do need to be reminded of the revolution itself. We are likely to become so preoccupied with our techniques and technologies that we miss the broad implications of what we are doing. We may even miss entirely the fact that our acts have broad and fundamental consequences for all people. But that is scarcely odd because either the basic technology or the effects of its products forms a mind-filling subject and the two concepts require rather different points of view if one is to understand them fully. Let us look at some of these vital implications.

Chemists and their colleagues in industry and in the other sciences carried through their several progressive stages the technical development of the sulfa drugs, of the powerful antibiotics, of ACTH and Cortisone, of extracted and synthesized substances having hormone actions, of abundant synthetic vitamins, and of many other new materials that make

possible greatly improved techniques in surgery and corrective medicine. Having done that, we chemists are content to consider our duty performed and move on to the next problem. We have stopped short of the next step when experience has proved that these agencies are effective. Actually they have lately increased our active and useful population each year by prolonging the average life span of Americans by some 0.47 of a year. An average life expectancy of 63.62 years in 1939-1941 had grown to 67.2 years in 1948. Largely these added years of life were gained through the beneficent effects of the developments named in the beginning of this paragraph and others like them, with some undoubted help from other agencies.

We need go very little beyond the mere statement of that fact to realize that here is, in the making, an economic and sociological problem of major and revolutionary proportions. On the one hand this gift of more life adds to our numbers of consumers but it also adds in somewhat larger proportion to our available human producing power, our labor force, because the added time is inserted into the middle years of our lives rather than at either end. Thus quite aside from its purely humane aspects, this extension of human usefulness can clearly contribute to raise our standard of living.

Certain of our economists are still alarmed by such things and cling to the fears inherent in the Malthusian theory of population growth. They see in a lengthening human life span a new force that has the effect of heightening the threat that Malthus saw a century and a half ago, that our rate of consumption of food and other goods rises faster than the ability of our limited world to supply them, but it is difficult, if not indeed impossible, to maintain such a view in the face of our tremendously and continuously rising rate of production. Beyond that, too, lies an ever increasing further potential production that is clearly inherent in researches and large scale experiments already completed but not yet economical to put into full scale operation in the United States.

Many of these developments in tremendously more efficient growth of foodstuffs lie in the fields of selection and hybridization of plants and animals, and in new and somewhat exotic agricultural methods. Such new sources of food as hydroponic growth of plants in nutrient solutions, factory growth of yeasts, and pond culture of fish and aquatic plants may seem far from practical in the United States today, but actually each of them is now being practiced economically on a substantial scale where circumstances justify it. Each of these possesses important chemical implications and

the solution of chemical problems involved has been basic to their success. Among the problems of orthodox agriculture that these strange methods of farming have solved are those growing out of the effects of trace elements on plant growth and yields of farms. Only in the isolated systems of hydroponic operations has it been possible to determine specific effects of traces that can—like the effect of one or two parts per billion of molybdenum on legumes—produce entirely disproportionate effects on yields. These effects, too, are quite independent of and in addition to those produced by standard fertilizers.

Somewhat similar in its startling effect on growth is the inclusion of minor amounts of antibiotics in the diets of farm animals and fowls. Faster, healthier growth and more efficient production of animal foods follow the introduction of these new substances, even in the form of the molds themselves, into the feed given pigs, chickens, and turkeys, especially. Not only are the animals healthier, but they undergo a dramatic increase in healthy weight without a corresponding increase in food intake.

We know, too, better and more effecive ways to prevent the tremendous inroads that insects have made in the past into our food supplies growing in the field, and that the numerous causes of spoilage and the depredations of vermin have caused in harvested crops. The power of new insecticides and fungicides of types barely known a decade ago has entirely changed the face of these problems, and even though applied to only a small fraction of their optential usefulness, the saving in food is tremendous.

New techniques in drying, preserving and freezing foods prevent further huge losses between the producer and the ultimate consumer. Methods developed during the World War II and after for supplying a varied nutritious diet to troops in the battle lines and in isolated positions have brought entirely new efficiencies in food preservation into full practice. Furthermore, the very practical miracle of freeze-drying of blood plasma is finding important applications in various parts of the food industry.

The combined result of all of these forces has been a tremendous gain in efficiency of our food production and distribution system. In his address accepting the Chemical Industry Medal for 1951, Ernest W. Reid, F.A.I.C., distinguished president of the Corn Products Refining Company, said: "A few decades ago it required eight persons on the farm to produce sufficient food for two persons living in the urban communities. Today this is reversed; two persons on the farm can produce sufficient food for eight persons in the urban community." That is true in spite of the universally admitted fact that

even American farm methods as practiced represent only a small fraction of what could be accomplished, if the most efficient methods we know were followed universally.

Finally this picture of a chemical revolution is rounded out by the proof adduced from rationing during World War II that people do not need high caloric intake, if the foods available to them are intelligently selected and varied to supply all the needed nutrients. British and especially German experience with reduced diets bears this out; throughout the period of stringent rationing the health of the people was far above normal levels.

The Basic Causes of Conflict

If we examine the ordinary causes of wars, we shall find hunger and poverty of whole peoples to be almost always, if not universally, the basic cause behind conflicts. Healthy, well-fed people can seldom be persuaded to listen to firebrands who would lead them into battle. If they listen at all to such inflammatory individuals, it is only to pass time and not to be carried away into conflicts of someone else's making. Whatever may be the announced cause of any people's resort to arms, their basic needs and a hope of satisfying them lie behind the aggressor's success in stirring up strife. Health and plenty are antithetical to war.

It hardly seems necessary to argue the great weight of factors of this kind in allaying the causes of war. No people who are well fed need embark upon wars to acquire agricultural lands to feed them. Indeed substantial scale experiments made during World War II demonstrated forcefully that placid individuals can be turned into quarrelsome fighters by feeding them on sub-standard diets, and conversely, quarrelsome trouble makers can become peaceful and content when well-fed. This scientific proof of what women have known from time out of mind readily transfers with practically no change from single persons or small groups to international relations, for nations represent only the combined reactions of great numbers of individuals. Similarly the creature comforts and economic security that come from productive industry need no longer be causes of international envy if all people are provided with the means in human and mechanical power to create these values for themselves.

The Road to Peace

Viewing the vast productivity of science in these and other fields, Vannevar Bush said, "The technical part is easy. The problem is how to apply the advances made by physical scientists under conditions existing in a real world. This is a task not for physical but for social scientists, and for political practitioners."

One must agree with Dr. Bush to a point, but the muddy thinking of

many of our political contemporaries and their complete failure to grasp the significance of these developments requires that something be done to spur them to action. Not that we chemists have either the ability or the inclination to assume these weighty political and social responsibilities, but rather that we must find ways to give others, who can do what is necessary, the benefit of our thinking. That above all requires that we individually think about the implications of what we are doing and how best to utilize our results for all men.

All of this adds up to an important responsibility that American chemists and American chemical industry should assume toward the world we live in; to foster and promote the dissemination of these techniques and values to all peoples quite regardless of international boundaries. It is no longer proper or right that we should look to others to do this. That was all very well in the day when ours was a small struggling part of American industry, but now we have grown up in ability and in prestige if not in actual physical size.

If we are to do our full share in today's troubled world, we must go far beyond our own concerns and see that all the world has the best that we can produce in materials, in processes, and in the technologies to which our operations contribute. In doing this, we will need the cooperation of many other agencies in industry, government and trade, for the job is far too big for even a lusty industry like ours to do completely and alone. But the responsibility for initiating the movement can and must be ours. It is a ringing challenge to all chemists, and all Americans, for in this direction lies the surest road to lasting peace.

Honored: Dr. Donald F. Othmer, F.A.I.C., chairman of the Department of Chemical Engineering, Polytechnic Institute of Brooklyn, by being made an Honorary Member of the Faculty of the University of Conception, Chile, on December 27th. Dr. and Mrs. Othmer are in Chile, at the invitation of Chilean industrial leaders, to consider the starting of a wood utilization program.

Appointed: By the Bon Ami Company, Dr. Daniel H. Torry as director of the company's research laboratory in New York, N.Y.

Special Assistant: Dr. Harry L. Fisher, Hon. AIC, with the Research and Development Branch of the Synthetic Rubber Division, Reconstruction Finance Corporation, Washington, D.C.

Exhibition: Of printed works by and memorabilia of Antoine-Laurent Lavoisier (1743-1794), at the Grolier Club, 47 E. 60th St., New York 22, N.Y., from February 19th through March 30th.

COUNCIL

OFFICERS

President, Lawrence H. Flett
President-elect, Lincoln T. Work
Secretary, Lloyd Van Doren
Treasurer, Frederick A. Hessel

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Cecil L. Brown, *New Jersey Chapter*
Emmett B. Carmichael, *Alabama Chapter*
C. C. Concannon, *At-Large*
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Raymond Stevens, *New England Chapter*
Manuel Tubis, *Los Angeles Chapter*
Florence E. Wall, *At-Large*

National Council Meetings

Meetings of the AIC National Council will be held at The Chemists' Club, 52 E. 41st Street, New York, N.Y., at 6:00 p.m., on the following dates:

April 9, 1952
May 6, 1952

November Meeting

The 279th meeting of the AIC National Council was held at The Chemists' Club, New York, N. Y., November 14, 1951, at 6:00 p.m. President-elect Lincoln T. Work presided.

The following officers and councilors were present: J. R. Bowman, C. L. Brown, C. C. Concannon, F. A. Hessel, M. J. Kelley, D. Price, L. Van Doren, and L. T. Work. Dr. H. B. Hass and V. F. Kimball were present.

The minutes of the previous meeting were approved.

The Secretary reported that the INSTITUTE now has a total of 2486 members.

The Secretary announced with deep regret the death of Dr. Boris N. Lougovoy, F.A.I.C., on Oct. 19, 1951.

The subject of group life insurance was referred to a committee consisting of Dr. Hessel, chairman; Dr. Van Doren and Dr. Work.

A letter from the New York State Society for Medical Research, Inc., was presented, and the following resolution was approved:

RESOLUTION: Whereas, the progress of medical science in recent years has contributed greatly to the health, happiness, and longevity of mankind and promises to be equally rewarding in the future, and

Whereas, such progress cannot be maintained without the use of living animals for experimentation, and

Whereas, animal experimentation is conducted by humanely motivated investigators with full use of anesthetics wherever more than minimal pain is involved and with every care to avoid undue discomfort to the animals involved, and

Whereas, thousands upon thousands of unclaimed and unwanted dogs and cats are being destroyed uselessly in New York State pounds while the qualified medical research and training institutions of this area have been forced to delay vital life-protecting studies for the want of a few hundred such animals; be it therefore,

RESOLVED, that The American Institute of Chemists at its meeting held Nov. 14, 1951, endorses wholeheartedly the use of living dogs and cats and other animals for research and instruction purposes by responsible investigators in approved laboratories and strongly urges the enactment of such city, state, or Federal laws as may be deemed necessary to make available for this purpose any impounded unclaimed dogs and cats which would otherwise have to be uselessly destroyed; and be it further

RESOLVED, that a copy of this resolution be sent to the New York State Society for Medical Research which is seeking such legislation.

Dr. Hessel, as chairman of the Committee to set up a procedure for the handling of dues of Life Members, reported the following procedure, which was adopted: The Council recommended to the Board of Directors that $3100 of INSTITUTE funds be set aside to represent the dues of present living Life Members of the INSTITUTE, and that future Life Members' dues be added to it. The interest from these monies will revert to the general fund. When a Life Member dies, $100.00 will be returned to the general fund.

Dr. Kelley reported that plans were going ahead for the Annual Meeting.

Mr. Concannon reported that the Washington D.C., Chapter had held a meeting recently and that L. N. Markwood, director of the Chemical Division, Office of International Trade, was interesting nonmembers in the work of the INSTITUTE.

Dr. Bowman reported that since there was no AIC Chapter in Pittsburgh, members from that area were invited to INSTITUTE meetings in Philadelphia.

Dr. Brown stated that seventy members were present at the recent meeting of the New Jersey Chapter and that two-thirds of these brought guests or members of their families. An excellent talk was given by Dr. Henry L. Cox. The New Jersey Chapter has been active in the improvement of the State Teachers' Colleges.

Dr. Hass reported that the New York Chapter would hold a student meeting on December 13th; the subject: "What Does Industry Expect of the Chemist." He reported that plans for one Chapter activity, an employment agency, are continuing.

The following new members were elected:

FELLOWS

Allen, Robert Ray
Chemist, Development Department, Armour & Co., 1425 W. 42nd St., Chicago, Ill.

Sharrard, George Francis
Head, Technical Service Div., Westvaco Chemical Div., Food Machinery & Chemical Corp., 405 Lexington Avenue, New York 17, N. Y.

Smernoff, R. Gerald
Chief Chemist, Process Chemicals Co., 2831 Exposition Place, Los Angeles 8, Calif.

MEMBERS

Hilsdorf, George John, S.J.
Chairman, Chem. Dept., St. Peter's College, Jersey City 6, N. J.

Lofberg, Robert Tor
Sr. Chemist, Research Development Div., Los Angeles Air Pollution Control District, 5201 Santa Fe, Vernon, Calif.

RAISED FROM MEMBER TO FELLOW

Eckstein, Vincent F.
Engineering Associate, Merck & Co., Rahway, N. J.

McKean, Walter Addison
Plant Manager, Allied Asphalt & Mineral Corp., S. 2nd St., Dunellen, N. J.

Sittenfield, Marcus
Consulting Chemical Engineer, 1411 Walnut St., Philadelphia 2, Pa.

Rapkin, Edward
Research Chemist, Protein Research, Armour & Co., 1425 W. 42nd St., Chicago, Ill.

Stupin, Peter J.
Research Director, Chemist, Research Department, Calavo Growers of Calif., 4833 Everett Avenue, Los Angeles 58, Calif.

Witoff, Arnold A.
Industrial Representative, Sales Dept., United Distillers of America, 350 Fifth Avenue, New York 1, N. Y.

ASSOCIATES

Laskowski, Donald E.
Assistant Chemist, Armour Research Foundation of Illinois Institute of Technology, 35 W. 33rd St., Chicago, Ill.

RAISED FROM ASSOCIATE TO FELLOW

Abere, Joseph F.
Research Chemist, Minn. Mining & Mfg. Co., 367 Grove St., St. Paul, Minn.

RAISED FROM ASSOCIATE TO MEMBER

Gist, Lewis A., Jr.
Research Associate, Organic Chemistry, The Geo. Washington Carver Foundation, Tuskegee Institute, Alabama

Brown, David Graham
Chemist, Res. Dept., Air Reduction Co., Inc., Murray Hill, N. J.

REINSTATED TO FELLOW

Stewart, Jeffrey Robert
Chemical Engineer, Procurement Specifications Section, Dept. of the Navy, Bureau of Yards & Docks, Washington 25, D. C.

REINSTATED TO ASSOCIATE

Rev. Sister Saint Dolores Marie, CND
Teacher, High School Chemistry, Notre Dame Convent, 130 S. Elm Street, Waterbury, Conn.

AIC Activities

C. P. Neidig, F.A.I.C.

Washington Chapter

Chairman, Louis N. Markwood
Vice Chairman, Milton Harris
Secretary, Paul E. Reichardt
Treasurer, John F. Williams
Representative to National Council, L. N. Markwood

The Washington Chapter met for luncheon, Jan. third, at the Jefferson Hotel, Washington, D.C., with Chairman Markwood presiding. Several matters of business were concluded, among which was the appointment of a Committee to bring in a nomination for the recipient of the first Honor Scroll of the Washington Chapter. Dr. Harry L. Fisher, Hon. AIC, was named chairman of this Committee.

Another Committee was appointed to review a document of the U.S. Civil Service Commission which describes job standards for chemists. It is hoped that this review will be completed in the near future after which the Chapter will probably take a position with respect to the standards and recommend that it be referred to the INSTITUTE and thereafter be considered by the National Council.

The last luncheon of 1951 was held at the U.S. Agricultural Center at Beltsville, Maryland. Meeting at this location affords an opportunity for fellowship with the group of our members working at the Center, who find it difficult to get into Washington for regular meetings.

It is planned to continue the highly successful luncheon meetings at monthly intervals for the remainder of this year.

A dinner meeting had been scheduled for December fourteenth in Richmond, Va. Plans had been laid and arrangements made by Dr. William E. Trout of the University of Richmond. However, a sudden ice and snow storm, which rendered roads hazardous and snarled railroad traffic, prevented the officers of the Chapter from leaving Washington. The meeting was regrettably cancelled. It is hoped that new arrangements can be made in the spring when weather conditions are likely to be more propitious.

Will You Come?

Feb. 1st. Chicago Chapter Presentation of Honorary AIC Membership to Dr. Ernest H. Volwiler, F.A.I.C.

Feb. 7th. Pennsylvania Chapter. Engineers' Club, Philadelphia. Speaker: Dr. P. D. Foote, vice president, Gulf Oil Corp., "Middle East Petroleum."

Mar. 20th. New York Chapter. American Museum of Natural History, New York, N. Y. Student Medal Awards. Buffet 6:30 p.m.

Mar. 25th. AIC Luncheon, sponsored by the Niagara Chapter as part of the 121st National Convention of the American Chemical Society, Buffalo, N. Y. AIC members who plan to attend the Convention should send luncheon reservations to T. E. Gilbert, Bisonite Co., Inc., 125 Lakeview Ave., Buffalo 1, New York.

Apr. 4th. Chicago Chapter meeting. (Write W. L. Kubie, Sec.-Treas. AIC Chicago Chapter, c/o Darling & Co., 4201 S. Ashland Ave., Chicago 9, Ill. for details.)

May 1st. Pennsylvania Chapter. Presentation of Student Medals to outstanding college seniors in area. Speaker to be announced.

May 2nd. Chicago Chapter meeting. (See Apr. 4th item above.)

May 7-8th. Annual Meeting of THE AMERICAN INSTITUTE OF CHEMISTS. Hotel Commodore, New York. Chairman of Arrangements Committee: Dr. Maurice J. Kelley, Nopco Chemical Company, Harrison, N. J.

May 22nd. Annual Meeting, New York Chapter. Program to be announced.

June 6th. Chicago Chapter meeting. (See Apr. 4th item above.)

AIC Members who are in Washington, D. C., can find out about Washington Chapter meetings by telephoning the Chapter secretary, Paul E. Reichardt, at Republic 3275, Extension 221.

AIC Members who plan to visit New Orleans, La., are invited to get in touch with National Council Representative, Harold A. Levey, 311 Audubon Blvd., New Orleans, La.

Opportunities

Doris Eager, M.A.I.C.

Position Available

Organic Chemist: For new product development (pharmaceutical) with well known company in Connecticut. B.S. or equivalent degree as well as some previous experience required. Submit detailed resume of education, experience, age, present salary, etc. Box No. 21, THE CHEMIST.

Chemists Available

Organic Chemist: M.A.I.C., Ph.D., 3 years industrial research and development. Experience in pharmaceuticals and surfactants. Seeking position offering opportunity for advancement in N. J., Conn., or metropolitan N. Y. Box 20, THE CHEMIST.

Chemist: F.A.I.C., Ph.D., Age 39, 10 years industrial experience organic research, development and sales service, publications and patents, now in charge of research group. Desires change to more aggressive growing research and development organization. Interested in business management, likes to meet people and make contacts. Type of work and organization more important than starting salary. Box 22, THE CHEMIST.

Organic Chemist: F.A.I.C., M.S. 12 years industrial experience, research, development, production, synthetic and natural pharmaceuticals, fine organic chemicals, intermediates, in a supervisory, administrative capacity. Ideas for new compounds. Qualified for responsible production or research position. Metro. N.Y area only. Box 24, THE CHEMIST.

Chemical Engineer — Organic: F.A.I.C., M.S. Diversified experience, research development, large scale production, organic chemicals. Production cost estimating. Trouble shooting. Extensive administrative, supervisory experience. Capable initiating work from literature search through production. Available immediately. Metropolitan N. Y. area only. Box 28, THE CHEMIST.

Chicago International Trade Fair: To be held at the Navy Pier, Chicago, Ill., Mar. 22nd to April 6th. Executive Vice President: John N. Gage, Col. U.S.A. (Ret.) Headquarters: Merchandise Mart, Chicago 54, Ill.

Conference: On Air Pollution Abatement, to be held by the Manufacturing Chemists' Association at the Hotel Statler, New York, N.Y., February 25th and 26th.

Short Course for Industrial Editors: To be given at Oklahoma A & M College, Stillwater, Okla., March 24th to 29th. Information may be obtained from Prof. Clement E. Trout, Technical Journalism Department.

For Your Library

Advances in Enzymology

Vol. XI. Editor: F. F. Nord. Interscience Publishers, Inc., 1951. 471 *pp.* 6″ *x* 9″. $9.00.

The chapter headings, and authors are: The Nature of Entropy and its Role in Biochemical Processes, by H. Gutfreund; Reaction at Interface in Relation to Biological Problems, by J. F. Danielli and J. T. Davies; Chlorophyll Fluorescence and Photosynthesis, by E. C. Wassink; Thiol Groups of Biological Importance, by E. S. G. Barron; Pectic Enzymes, by H. Lineweaver and E. F. Jansen; Enzymic Synthesis of Polysaccharides, by E. J. Hehre; The Biological Transformation of Starch, by S. Peat; Chemical Investigations on Alliin, the Specific Principle of Garlic, by A. Stoll and E. Seebeck; Some Problems of Pathological Wilting in Plants, by E. Gaeumann.

It may be seen from the table of contents that the title of this annual should really be "Advances in Biochemistry," since much of its material deals with problems concerning general biochemistry. At least one of the chapters (Chlorophyll Fluorescence and Photosynthesis) should have been condensed since it contains 107 pages and 38 figures. All twelve chapters are excellent contributions to biochemistry.

—Dr. Henry Tauber, F.A.I.C.

The Textbook of Electrochemistry

By G. Kortum and J. O'M. Bockris. Elsevier Press, Inc. 1951. *Revision of the* 1947 *German Edition.* 351 *pp.* 6″ x 9″. $7.00.

Since the reviewer recently contemplated writing a book on electrochemistry, it has been an inspiring experience to read a book that so lucidly explains the principles of the subject. As a basis for productive work in electrochemistry, whether in industry or along theoretical lines, this text is unquestionably the best that has appeared in the English language. Every college and university should have a course in electrochemistry, with Kortum and Bockris as the text. Those who have left school, and who have any interest at all in electrochemical methods, should find this text useful and valuable in their work.

Prof. Kortum, formerly of the University of Tuebingen, is well known as an expert on absorption spectra. A versatile scientist, his first paper was on the "Significance and Use of Rotation-dispersion in Chemical Questions," Z. angew. Chem. **43,** 341-8 (1930). Now of the National Physical Laboratory of Pretoria, South Africa, his recent papers deal with the absorption spectra of solid substances; and on the effect of extraneous gases on the pressure broadening of the rotation band of the HCN molecule at 10,380 A. One must refrain from quotations from the text, because it is best understood in terms of the nomenclature and equations. Not only are Profs. Kortum and Bockris brilliant experimentalists, but in their present work on electrochemistry they succeed in imparting to the reader a clear understanding of fundamentals.

We shall look forward to seeing Volume II, which will deal with such interesting subjects as electrical phenomena at interfaces, irreversible electrode processes, electrochemistry of gases, and the experimental methods of electrochemistry.

—Dr. Garth L. Putnam, F.A.I.C.

Preparation, Properties, and Technology of Fluorine and Organic Fluoro Compounds

Editor: Charles Slesser. Assoc. Ed. S. R. Schram. 1951. *McGraw-Hill Book Co.* 868 *pp.* 6¼″ *x* 9¼″. $10.50.

As part of the National Nuclear Energy Series of the Manhattan Project Technical Series, this volume presents the findings in the fields of fluorine and fluoro organic compounds which were made under wartime Manhattan District contracts. The discoveries outlined here are excellent examples of the technological progress which was a subsidiary part of the grand design for the production of atomic bombs. Given the task of preparing materials of extreme chemical inertness, needed in the plant where uranium isotopes were to be separated by gaseous diffusion, five industrial laboratories and four academic institutions made major contributions in the field of fluorine, and the papers making up this volume offer first-hand accounts of these accomplishments by those who performed the experiments.

—Dr. Frederick A. Hessel, F.A.I.C.

Colloidal Dispersions

By Earl K. Fischer. John Wiley & Sons, Inc. VII + 387 pp. 6" x 9". $7.50.

"The subject of this monograph, the dispersion of finely divided solids in liquid media . . ." (p. 1) is presented by Fischer in a very readable account of the scientific background and the technical applications. It is a pleasure to see how the author integrates historical developments with recent work. He includes in his judicious selection of references a broad coverage of the patent literature, a source of information which some of our scientific publications seem to scorn.

"Where available information ran low, I have, on occasion, taken the liberty of speculating, and the reader will find hypotheses advanced at various points through the book." (p. V) The book thus becomes an original contribution to the literature on the properties and production of small particles of matter which occur in so many industrial operations. After discussing particle sizes, solid-liquid interfaces, and the influences of surface-active agents, Fischer describes the process of comminution and the operation of such widely used machines as mixers and mills. He devotes the last chapter to dispersion by "phase transfer" in which colloids are brought from a water phase into oil or the reverse.

Colloidal dispersions in gases are only briefly mentioned. The hope that the author would be able to extend the treatment of aerosols in a future edition has been shattered by fate; he died recently at the age of forty-six.

—Dr. Eduard Farber, F.A.I.C.

Quantitative Organic Analysis via Functional Groups

By Sidney Siggia. John Wiley & Sons, Inc. 1949. 153 *pp.* 5⅝" *x* 8⅝". $3.00.

This book contains an excellent collection of tested methods of analysis of active groups, very useful and practical. It contains much information and the procedures include a discussion of applicability, interferences, accuracy and precision, and the chemistry involved as well as the mechanics of the methods. It is an excellent reference book.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Urban & Schwarzenberg, Munich 22: *Ullmann's Encyclopaedie der technischen Chemie, I,* by E. Wicke and E. Roemer, 3rd ed. Finally, volume I of the famous "Ullmann" has arrived. It is a big book (1011 pp., DM 108) with 1423 judiciously selected illustrations, unexcelled in contents and typographically excellent. This volume is concerned with the construction of chemical apparatus, equipment, and with the general techniques employed in laboratories and industries. Each of its 7 chapters, written by the foremost experts in their fields, brings in alphabetical order all subjects of theoretical or practical importance. If the following volumes are as complete and authoritative as this one, there is no doubt that "Ullmann" again will be the most exhaustive, all-inclusive encyclopedia for chemists and chemical engineers anywhere. • *Medizinische Terminologie,* by H. Volkmann, 35th ed., 1130 pp., DM 28. Here is an encyclopedic book which explains tens of thousands of medical, chemical, biological, and other terms briefly, yet sufficiently informative even for the layman. Of special interest are the biographical sketches about the many scientists who have contributed to the progress of medicine.

Akademie-Verlag, Berlin NW 7: *Schmelzpunkt Tabellen organischer Verbindungen,* by W. Utermark, 1951, 572 pp., paper covers, DM 60. This compilation of melting points of 3334 organic compounds is of great practical value to the analytical and research chemist. Starting with a melting point below —190° C. and gradually going up to 507° C., the author lists for each compound: name, structural formula, molecular weight, state of aggregation, color, specific gravity, boiling point, Beilstein reference, physical constants and properties, solubility, and characteristic reactions. Name and formula indexes occupy 24 pages. To make this book usable for people who do not read German, keys of abbreviations should be added in different languages in a new edition of these important tables.

Booklets

"'Dag' Colloidal Graphite in the Electronic Industry." Bulletin No. 433. Acheson Colloids Corp., Port Huron, Mich.

"Ortho-Nitrobiphenyl. Plasticizer & Chemical Intermediate." 10-pp. Bulletin. Monsanto Chemical Co., St. Louis 4, Missouri.

"Hawkshaw in White." Reprint. Truesdail Laboratories, Inc., 4101 North Fugueroa St., Los Angeles 65, Calif.

"GS Safety Air Vent Pouring Spout." Information. General Scientific Equipment Co., 27th & Huntingdon Sts., Philadelphia 32, Pa.

"30-Year History in the Lighter Vein." Brochure. Foster D. Snell, Inc. 29 West 15th St., New York 11, N.Y.

"Brookfield Counter-Rotating Mixer". Brochure. Brookfield Engineering Laboratories, Inc., Stoughton, Mass.

"Organic Chemicals." Catalog. Smith New York Co., Inc., Freeport, Long Island, N.Y.

"Vat Dyeing: Importance of Initial Exhaustion Rate." By O. W. Clark and H. R. McCleary, F.A.I.C., Bulletin No, 810. Advertising Dept. American Cyanamid Co., Calco Chemical Div., Bound Brook, N.J.

"Ferrous Ammonium Sulfate." High purity. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Regeneration of Chromic Acid Solutions by Cation Exchange." Reprint. Mutual Chemical Co. of America, 270 Madison Ave., New York 16, N.Y.

"Size Reduction." Reprint of article from *Industrial & Engineering Chemistry.* Jan. 1951." Available from Dr. Lincoln T. Work, F.A.I.C., 420 Lexington Ave., New York 17, N.Y.

"Protecto-Grid for Laboratory Sinks and Drainboards." U.S. Stoneware, Akron 9, Ohio.

Guest of Honor: Dr. James Bryant Conant, Hon. AIC, at the 69th Annual Dinner of the Harvard Club of Washington, D.C., February 15th.

Biggest Year: 1952, for the makers and distributors of scientific instruments and laboratory appparatus, according to J. Claire Evans, president of the Scientific Apparatus Makers Association. Sales for 1951 were estimated to be forty per cent above those for 1950. "Only a portion of this increase is attributable to the defense program," he said. "Perhaps the most important factor is the increased emphasis on research on new products and new processes and on production control now being practiced increasingly in industry, by both large and small companies." He added, "we expect the upward trend to continue throughout 1952."

Elected: Bernard E. Schaar, F.A.I.C., as a trustee of Hull House, the Chicago settlement founded by Jane Addams. Mr. Schaar is president of Schaar & Company, Chicago 7, Ill.

Promotions: Kenneth H. Klipstein, F.A.I.C., to assistant administrator in charge of the Chemical Rubber and Forest Products Bureau, National Production Authority, in which is located the Chemical Division, of which Osgood V. Tracy has now become director.

Appointed: Dr. Gustav Egloff, Hon.AIC, as honorary chairman of the Second International Art Exhibit planned as part of the Seventh National Chemical Exposition at the Coliseum in Chicago, Sept. 9th to 13th. The art exhibit is limited to the work of chemists, and is open to work in oils, temperas, water colors, drawings, and prints. Photographs are not accepted. Each exhibitor may enter two works. Entry cards may be obtained from the National Chemical Exposition, 86 East Randolph St., Chicago, Ill.

New Position: Arnold A. Witoff, M.A.I.C., is now technical representative for United Distillers of America, 350 Fifth Avenue, New York, N.Y. He was formerly research chemist with General Chemical Company, New York, N.Y.

Condensates

Ed. F. Degering, F.A.I.C.

Buckman Labs., Inc.

Regimentation may occur under a government agency in a democracy, as well as in a totalitarian state. The issuance of government subsidy usually carries with it controls, sometimes beneficial, but often burdensome, as many a farmer knows. Hence, as government comes to the support of research, one may properly fear an increasing interference by government with the free course of science, with essential funds as the means of coercion.

—Vannevar Bush

Synthetic detergents topped the billion-pound mark during 1950.

Two out of three of the human inhabitants of this place called earth, according to the Department of Nutrition of the National Live Stock and Meat Board, suffer at present from malnutrition, ranging from mild malnutrition to actual famine.

The need for scientists who can provide new basic knowledge is at an all-time high.

—Dr. James G. Horsfall

Some atomic energy chemists believe that the isolation of adennylic acid, a new nucleic acid, is one of the most significant events in biochemistry.

Only about five per cent of young engineers are good observers and only about five per cent of the good observers are good recorders.

—Frank Gilbreth

According to a survey made in 1947, 54 per cent of the drugs then in use were unknown ten years before.

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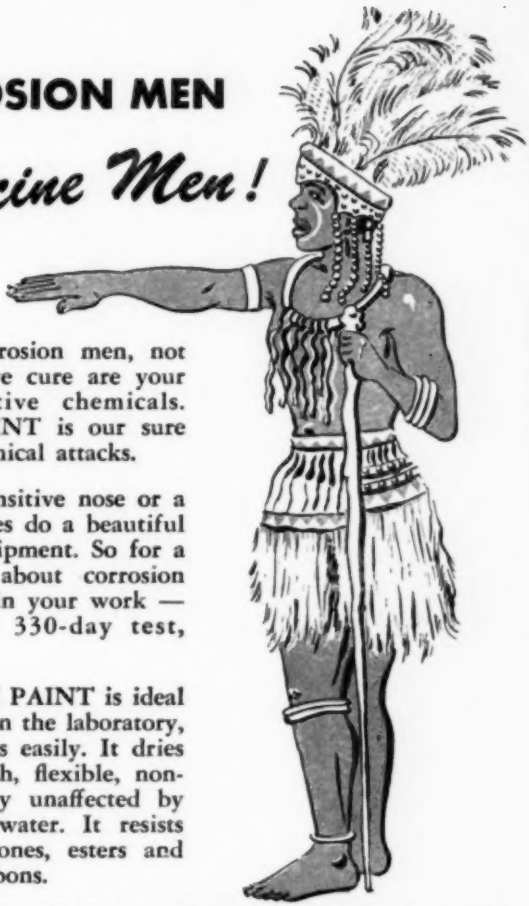

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